

I. INTRODUCTION

USAID's environmental goal—protecting the world's environment for long-term sustainability—has long been considered a silent goal. Rapid population growth, industrialization, and urbanization all increase the demands made of natural resources. Environmental changes often go by unnoticed until a crisis erupts. Productive croplands disappear, deserts enlarge, rich oceans are overfished, large inland lakes are polluted or drained, wetlands are lost to urban sprawl and agricultural expansion, essential ecosystems such as tropical forests and coral reefs are often destroyed or severely damaged for short-term economic gain.

In many places, especially in the developing world, environmental degradation strikes at the livelihoods of people who must struggle to produce the food they need to survive. Almost one quarter of the world's fish stocks have been depleted, for example, and another 45 percent are being fished at their biological limit.¹ In ways less immediate, but equally compelling, poor and misguided stewardship of the earth's natural resources severely limits economic growth and prosperity.

In 1997 several global environmental catastrophes gained worldwide attention:

- El Niño had devastating effects on Africa, Asia, South America, and the West Coast of the United States. Some areas were drenched, while others were deprived of the rains needed to sustain crops and replenish drinking water supplies. Widespread road damage, dam collapse,

crop destruction, coastal and inland flooding, and loss of life all were attributed to El Niño. In California alone, estimates of lost economic productivity from El Niño were \$500 million to 600 million.²

- Burning from land-clearing in Indonesia destroyed millions of acres of biologically rich forestlands. Unprecedented forest fires raged for weeks and threatened millions in Brazil, Mexico, Central America, and Asia. City dwellers throughout Southeast Asia faced severe haze and pollution, and smoke closed airports to traffic, shut schools and hospitals, and kept millions indoors. Those with respiratory conditions, the elderly, infirm, and newborns were placed at high risk of illness or death. Estimates of economic loss in Southeast Asia alone exceeded one billion dollars.³ One of the main causes of these fires was that palm plantation owners took advantage of El Niño to burn off their fields.
- In 1997 the effects of global warming on air pollution, crop production, flooding, and health became more evident. Meteorological evidence from many sources clearly shows that 1997 was the warmest year on record. 1998 may be even warmer.⁴ Emissions of greenhouse gases, including industrial carbon dioxide, continued to climb steadily, especially from rapidly developing countries such as Brazil, India, Indonesia, and Mexico. At the same time, the

**In many places,
environmental
degradation strikes
at the livelihoods of
people who must
struggle to produce
the food they need
to survive.**

capacity to absorb these harmful gases declined markedly because of uncontrolled deforestation and other unsustainable land-use practices.

On the positive side, 1997 witnessed the historic signing of the Kyoto Protocol, the first legally binding agreement to curb global greenhouse gas emissions to 1990 levels. As of November 1998, more than 50 nations worldwide, including the United States, had signed the protocol. Legislative bodies must ratify them, however, to make the agreement binding on signatory countries.

USAID is laying the groundwork now for other positive environmental changes with its 1998–2002 Climate Change Initiative. The initiative will help ensure a substantial U.S. government financial commitment during this period. In June 1998, the President announced three components to the

Initiative: a minimum of \$750 million in grant assistance during the next five years, up to \$250 million in “climate-friendly” investments stimulated by credit instruments, and a \$25 million interagency climate change program.⁵ “Climate-friendly” investments are those that try to rationalize energy markets, increase efficiency in energy use and production, promote policies to support environmentally sound energy, and foster increased use of renewable energy sources.

USAID is concentrating global climate change activities on those countries and regions that contribute most to net global greenhouse gas emissions and whose governments are most receptive to taking positive actions. USAID has identified nine countries and three priority regions thus far: Brazil, Central Africa, Central America, Central Asia, India, Indonesia, Mexico, the Philippines, Poland, Russia, South Africa, and Ukraine.

AGENCY GOAL FIVE

The world's Environment Protected for Long Term Sustainability

Agency Objective 5.1

Threat of global climate change

Agency Objective 5.2

Biological Diversity

Agency Objective 5.3

Sustainable urbanization including pollution

Agency Objective 5.4

Use of environmentally sound energy services

Agency Objective 5.5

Sustainable natural resource management

The Environmental Strategic Framework

USAID works closely with its development partners worldwide to pursue five objectives: 1) reduce threats to global climate change, 2) conserve biological diversity, 3) promote improved urbanization and better pollution management, 4) increase the provisions of environmentally sound energy services, and 5) promote sustainable natural resource management. The Agency recognizes that distinguishing between these objectives is somewhat artificial, since environmental problems tend to be interwoven. Work in forestry has impact on biodiversity, global climate change, and sustainable natural resource

management. However, dividing its environmental efforts into these five discrete objectives allows the Agency to evaluate its performance and manage its programs more effectively.

- **Reduce the Threat of Global Climate Change**

Greenhouse gas emissions trap heat in the environment, which, over time, leads to rising global surface temperatures. While this trend is not new, the pace has dramatically accelerated in recent years because of increasing population growth, stepped-up industrialization, and rapid urbanization. Rising global temperatures can have devastating effects on agriculture and curtail forestry-based livelihoods. Rising sea levels will inevitably cause widespread flooding in low-lying coastal areas. USAID works to curb harmful emissions from energy and industrial sectors, decrease deforestation, promote afforestation, and, increasingly, to address issues of vulnerability and adaptation to the global climate change threats.

- **Conserve Biological Diversity**

Maintaining biological diversity is necessary to conserve critical ecosystems. Many developing countries have ecosystems with a trove of biological resources and still undiscovered plant and animal species. Developing countries often deemed poor by traditional economic measures are frequently rich in “biological capital,” where many new health-promoting and life-sustaining pharmaceutical drugs have been discovered. USAID works closely with local communities and governments to help them conserve and sustainably manage these critical ecosystems in both protected and unprotected areas.

- **Promote Sustainable Urbanization and Improve Pollution Management**

In almost every part of the world today, people are flocking to cities in record numbers. Few cities are prepared for the consequences of too many people and too few municipal services. Poor living conditions degrade health, undermine economic growth, and breed political and social instability. Unfortunately, in many countries, female-headed households have less access to safe water and sanitation services than male-headed households. The Agency works to improve the capacity of municipal governments and private industries to provide adequate housing, reduce pollution, and make clean water and sanitation services available to all—especially the poor.

- **Increase the Provision of Environmentally Sound Energy Services**

Developing countries need more energy to help their economies grow. Often the cheapest available fuel comes from burning traditional fuels like coal, oil, and wood. Indiscriminate use of these fuels denudes forests, blackens the skies, pollutes the air, and often fouls rivers and streams. USAID programs strongly encourage energy efficiency and the use of alternative, renewable energy resources. It promotes “clean” technologies to reduce pollution and strives to engage the private sector to provide the latest available energy technology.

- **Promote Sustainable Natural Resource Management**

The economies of many developing countries are tightly tied to their natural resource base. Most of their income comes from traditional use of farmlands, forests, and freshwater and coastal areas. Relentless population pressures, unsustainable farming and fishing methods, and market, price, and policy distortions often threaten the natural resource base. USAID works with local people to help them understand the need for sustaining natural resources, to introduce new and improved agricultural practices, and to encourage better management of forest, water, and coastal resources.

Distribution of USAID Programming by Strategic Objective

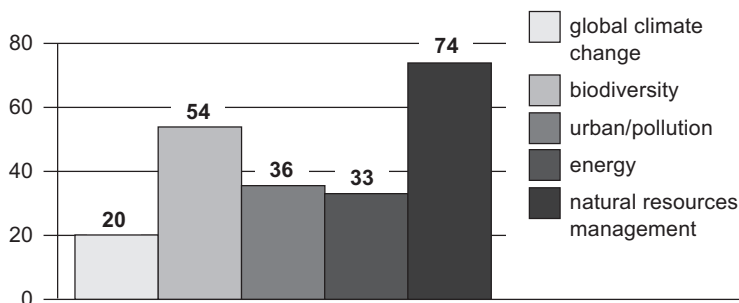
In FY97 the Agency helped prevent or lessen environmental damage in more than 60 countries worldwide—compared with 52 countries the previous year. New environmental programs in **Africa** and **Latin American and the**

Caribbean accounted for most of these. The Agency increased efforts to slow global climate change, improve natural resource management, and improve energy services. These changes reflect, in part, the Agency's increased attention to certain transborder issues, such as global warming. USAID's urban and biodiversity programs decreased only slightly. Unfortunately, program priorities in the **Europe and new independent states** region has led to fewer resources available to meet environmental problems in those countries.

Biodiversity conservation and natural resource management—the so-called green issues—continue to receive the most USAID environmental assistance. However, urban management, pollution prevention, and energy production—the so-called brown issues—are increasing priorities. The Climate Change Initiative may accelerate that trend.

On the budget front, USAID has increased its spending on environmental programs from 7.5 percent of its overall budget in FY94 (\$478.2 million) to 13 percent in FY97 (\$677 million). By comparison, the World Bank's annual commitment for environmental loans has decreased steadily from 3.6 percent of total projects approved in 1994 (\$750 million) to 1.3 percent in 1997 (\$250 million). While it is difficult to compare organizations and programs by budget alone, the World Bank's lowered spending makes for a bleak picture, given the magnitude of environmental problems in the developing world. Except for ENI, as noted above, USAID's level of support for environmental programs and its innovative approaches mean it will continue to play a leading role among donor organizations.

Figure 5.1
Percentage of Operating Units with ENV SOs, FY97
by Agency Objective



II. PROGRESS TOWARD ENVIRONMENT PERFORMANCE GOALS

Tracking progress in the environment is unlike tracking progress in education, population, or economic growth.

Measuring progress in this goal area involves developing indicators of environmental change, understanding how the data fluctuate naturally as well as how they are influenced by Agency programs and activities. USAID finds itself trying to learn how to measure the impact of its environment programs when, in some cases, even the most basic parameters are not well understood. This is not an easy task, and it is made more difficult because data are not always collected annually, so there is often a lag between the impact of a program and seeing the indicators change. Environmental change is often slow. Even when data are available, measures of forest cover, global climate change, and water pollution may not show much progress from year to year.

Despite these difficulties, USAID has developed or adopted indicators to help identify trends in environmental status and measure progress against its performance plan. The indicators are

- National environmental management strategies
- Nationally protected areas (in hectares and as a percentage)
- Carbon dioxide emissions, average annual rate of growth
- Percent of urban population with access to safe drinking water
- Percent of urban population with access to sanitation services
- Gross domestic product per unit of energy use (energy efficiency)

- Percent of energy production from renewable sources
- Annual change in total forest area (in hectares and as a percentage)

Country Development Trends

• National Environmental Management Strategies and Government Commitment

A government's commitment to a cleaner environment and to better management of natural resources is crucial to sustainable development, but "commitment" is difficult to measure and interpret. The strength of environmental policies in any country can reflect the priority its government assigns to environmental degradation.

Government policies can stimulate links between economic growth and the environment. Governments can also set priorities among environmental programs and integrate them by developing national strategies or national environmental action plans. The Organization for Economic Cooperation and Development—to which USAID belongs—has set forth a vision of development over the next decades. This planning document, *Shaping the 21st Century*, states that "there should be a current national strategy for sustainable development, during implementation, in every country by 2005, to ensure that current trends in the loss of environmental resources . . . are effectively reversed at both global and national levels by 2015." USAID incorporated this goal for environmental sustainability in its own 10-year strategy.

Many countries have completed national environmental action plans or similar environmental strategies in the past decade. Of USAID-assisted countries, 83 percent have completed them in sub-Saharan Africa, 71 percent in the Asia-Near East region, 53 percent in Latin America and the Caribbean, and 48 percent in central and eastern Europe and the new independent states. Another 10 percent of USAID-assisted countries are preparing action plans. Still more are updating existing ones. USAID is well on its way to achieving the *Shaping the 21st Century* goal by 2005.⁶

- **National Protected Areas and Biodiversity Conservation**

Biodiversity is essential to environmental and economic sustainability. The main approach most countries have taken to conserve biodiversity is to establish systems of national parks, wildlife refuges, forest reserves, marine sanctuaries, and other formally protected areas. More than 900 million hectares of the earth's surface are officially designated as protected, an area nearly equal in size to the continental United States.

The World Conservation Monitoring Center notes that recent growth of protected areas has been especially rapid in low- and middle-income countries. However, the more relevant issue is *which* areas are protected and how *effective* the protection is. Simply designating an area protected does not mean that the most vulnerable ecosystems or species are safe. Similarly, biological resources that fall outside formally protected areas must also be managed sustainably.

Many highly diverse ecosystems are in countries characterized by rapid population growth, poor land and resource use, and rapid urbanization. These countries are often those that can least afford to protect their ecosystems. The answer lies in complementary management of biodiversity conservation and economic growth. Agriculture, for example, is intrinsically linked to biodiversity, and depends on the quality of the environment, such as bees for crop pollination. Many watersheds, important for biodiversity, also provide clean water for urban populations. Other economic activities, such as nature tourism, or ecotourism, depend directly on healthy ecosystems.

Some experts recommend setting aside 10 to 15 percent of lands as protected areas. As of 1994 (the most recent data available) sub-Saharan Africa had 6.8 percent (78.2 million hectares) of its area protected, Asia-Near East and North Africa had 6.1 percent (46.4 million hectares), central and eastern Europe and the new independent states had 4 percent (82.8 million hectares), and Latin America and the Caribbean had 9.3 percent (73.5 million hectares). Except for LAC, most regions fall far short of the 10 to 15 percent goal. Nevertheless, each of these protected areas is at least a thousand hectares (2,500 acres) in size and can include national parks, natural monuments, nature reserves or wildlife sanctuaries, protected landscapes and seascapes, and scientific reserves with limited public access.⁷

Coastal resources also need to be protected. Coral reefs, comparable to tropical rain forests in species diversity, are in rapid decline. Causes include inappropriate coastal and watershed

development, destructive fishing practices, and untreated and unchecked pollution. Globally, 58 percent of all reefs are at risk from human activities. The reefs of Southeast Asia, which are the most species-diverse, are also the most threatened, with more than 80 percent at risk. Reefs are integral to the economies and food supplies of developing countries, accounting for about one quarter of the fish harvests. Revenue lost from destroying one kilometer of reef ranges up to almost \$1.2 million over a 25-year period.⁸

- **Carbon Dioxide Emissions, Energy Efficiency, Renewable Energy Sources, and Climate Change**

Global energy use has risen nearly 70 percent since 1971 and will continue to increase over the next several decades. As energy use rises, greenhouse gas emissions increase. Fossil fuels supply roughly 90 percent of the world's commercial energy and account for more than 80 percent of carbon dioxide released into the atmosphere.

Developing countries' commercial energy consumption will contribute approximately 40 percent of the world's carbon dioxide (CO₂) output by 2010. Much of this will come from China and south Asia, which depend heavily on coal, particularly when it is used for generating electricity. Seventy percent of the electricity in China and more than 60 percent in south Asia come from coal. Since electricity demand is rising 6 percent to 7 percent a year, this could double the CO₂ emissions there between 1990 and 2010.⁹ Unfortunately, cheap fossil fuels are economically advantageous—for the short term. Countries need to take action to increase energy efficiency; replace fossil

fuels with cleaner, more climate-benign fuels; and further develop and adopt renewable energy technologies.

Tables 5.1 and 5.2 show CO₂ emissions per capita in metric tons and energy efficiency (as measured by GDP per unit of energy use) for USAID-assisted countries by region. Country data for India and the United States are given for comparison purposes. They show that rates for both countries are increasing, yet India remains far behind the United States. The table also reveals wide differences among geographic regions. Europe and countries of the former Soviet Union emit more CO₂ per capita; countries in sub-Saharan Africa emit the least. This is the first

TABLE 5.1

Agency Goal: The World's Environment Protected for Long-Term Sustainability

Agency indicator: Carbon dioxide (CO₂) per capita industrial emissions in metric tons

Year refers to calendar year of data. In most cases data lag the reporting year.	Sub-Saharan Africa	Asia, Near East & North Africa	Europe & former Soviet Union	Latin America & the Caribbean
Baseline (1995)	0.81	1.31	4.70	1.21

India (1992–95): 0.9–1.0

United States (1992–95): 19.1–20.8

Note: CO₂ emissions stem from burning fossil fuels and manufacturing cement, and include emissions produced during consumption of solid fuels, liquid fuels, gas fuels, and gas flaring.

Source: *World Development Indicators* (table 3.5) based on Oak Ridge National Laboratory CDIAC database.

TABLE 5.2

Agency Goal: The World's Environment Protected for Long-Term Sustainability

Agency indicator: Energy efficiency—GDP per unit of energy use (1987 US\$ per kg. oil equivalent)

Year refers to calendar year of data. In most cases data lag the reporting year.	Sub-Saharan Africa	Asia, Near East & North Africa	Europe & former Soviet Union	Latin America & the Caribbean
Baseline	6.27	2.82	1.02	3.33
Most Recent Data (1994–1995)	6.61	2.67	0.94	2.54

India (1994–95): 1.6–1.7

United States (1994–95): 2.6–2.6

Note: The energy efficiency indicator is the measure of GDP per unit of energy use, defined as the U.S. dollar estimate of the real GDP (at 1987 prices) per kilogram of oil equivalent of commercial energy use. The larger the ratio, the greater the energy efficiency. Differences in this ratio over time and across countries are influenced by structural changes in the economy, changes in the energy efficiency of particular economic sectors, and differences in fuel mixes.

Source: *World Development Indicators* (1998) (table 3.8).

year USAID has used these data to set targets, so trends have not been assessed. Average energy efficiency is improving in sub-Saharan Africa but is worsening in all other regions. However, individual countries, such as India, have improved in energy efficiency.

- **Urban Population and Access to Safe Drinking Water and Sanitation Services**

Worldwide, with rapid migration to the cities, the number of people living in urban areas is increasing four times faster than those living in rural areas.

By the year 2000, more than half the world's population will live in urban areas. Urban growth rates are exceptionally high in the Asia-Pacific region and Africa.¹⁰ Seventeen of the world's 21 megacities (more than 10 million people) are in developing countries.

Urban poverty, dramatically affected by global financial crises, has been of increasing concern to USAID's environmental programs. In 1997 the Agency developed a global urban strategy called "Making Cities Work," which places poverty and the functioning of cities at the core of its overall development objectives. The strategy cuts across the Agency's six goal areas, stressing the pivotal role cities play in development. This strategy emphasizes building strategic partnerships with private business, financial, and non-profit institutions to increase dollar investments in potable water, roads, sanitation systems, solid-waste management, and shelter in urban localities.

Urban areas provide opportunities for economic development, but unless cities can better manage their environmental problems, these opportunities for development will not be fully realized. Many cities quickly deplete nearby areas of usable water and firewood, and industrial areas grow haphazardly. Air pollution exceeds health standards in most megacities. Sewage and industrial effluents are released into waterways with minimal or no treatment, threatening human health, restricting water from other uses, and contributing to environmental degradation.

Two of the main global indicators the Agency uses to measure progress toward sustainable urbanization are access to safe drinking water and

access to sanitation services. In 1996 the United Nations Center for Human Settlements estimated that 280 million urban dwellers lacked potable water and 588 million lacked basic sanitation. Additionally, less than 70 percent of solid waste was being collected in urban areas and only 50 percent of households were being served.¹¹

An estimated 2.9 billion people, in both urban and rural areas, lack access to adequate sanitation, up from 2.6 billion in 1990.¹² However, although reliable 1995 data are available, *trend* data are not available for most USAID-assisted countries. While information on access to safe water is widely used as an indicator, it is extremely subjective. Terms such as “adequate amount” and “safe” may have different meanings in different countries.¹³ Specifically, “safe” water in developing countries rarely meets water quality and access standards in Europe and North America. National and regional averages also mask differences in access to services between rich and poor, male and female, and urban and rural populations.

In USAID-assisted countries, 63 percent of the urban population has access to safe water in sub-Saharan Africa, 67 percent in Asia–Near East and North Africa, and 80 percent in Latin America and the Caribbean. Few countries in eastern Europe and the former Soviet Union report on access to safe water, so regional data are not available. Of USAID-assisted countries, 60 percent of the urban population has access to sanitation services in sub-Saharan Africa, 60 percent has access in Asia–Near East and North Africa, and 71 percent in Latin America and the Caribbean.

Only 60 percent of the countries in Europe and the former Soviet Union reported on access to sanitation services. Access to water and sanitation services is estimated to be relatively high there. However, the availability and quality of drinking water are at issue. In many areas drinking water is available only a few hours a day and often in insufficient volumes. Pockets of unsafe drinking water are found in certain agricultural, industrial, and urban areas. There are also many issues regarding sanitation services, including quality of sewage treatment, processing of solid waste, mixing of domestic and industrial wastes, and whether revenue is sufficient to sustain provision of these services.

- **Annual Change of Total Forest Area and Natural Resource Management**

The annual change in total forest area is one indicator the Agency considers in its approach to sustainable natural resource management. From 1980 through 1995, the developing world lost nearly 200 million hectares of forest. The greatest threats are from roads, mining, accidental fires, unchecked logging, slash-and-burn agriculture, and land conversion to cattle ranching and cash crops. Tropical forests provide a livelihood for 1.2 billion people. Trade in nonwood forest products is estimated at \$11.1 billion a year. Some governments continue to contribute to deforestation by selling timber at below-market prices. Fiscal and trade policies and related market factors, such as high interest rates and trade barriers, can create incentives to clear forests. Unclear land tenure, inappropriate land use, and unsound environmental policies also foster unsustainable resource extraction.

For USAID-assisted countries, the annual change in total forest area for 1990–95 was as follows: sub-Saharan Africa, –0.75 percent (–1.9 million hectares); Asia, –1.2 percent (–1.7 million hectares); the Middle East, –2.8 percent (–18,200 hectares); Europe and the former Soviet Union +0.48 percent (0.5 million hectares); and Latin America and the Caribbean, –2.23 percent (–4.8 million hectares).¹⁴

Fisheries are another natural resource that has been depleted, a loss for both local communities and global consumers. Fish harvest records from 1950 through 1994 show that 35 percent of the most important commercial fish stocks are declining. Catches shrank for 10 million small-scale fishermen because of competition from commercial vessels. In West Africa, artisanal fishers' catches fell more than half from 1985 through 1990 because of increased offshore commercial trawling. This shortfall affects developing countries disproportionately. When fish prices rise, more than a billion people who rely on fish for their protein are put at risk of inadequate nutrition.¹⁵

Global fresh water resources require careful management. Consumption rose sixfold from 1990 through 1995 and continues to increase as population and economic growth drive up agricultural, domestic, and industrial demands. The United Nation's intermediate projections suggest that the portion of the world's population in areas of water shortage will increase from 5 percent today to 24 percent by 2050. The new challenge is to integrate water management to achieve simultaneous objectives in agriculture, habitat maintenance, health, food security, and urban water supply. While these

problems exist all over the world, they are perhaps most severe in the Near East, where they can add another dimension of political volatility to already difficult situations.

Monitoring USAID Program Performance in Environment

In addition to monitoring performance at the country level, USAID closely assesses performance at the program level. An integral part of managing for results is the strategic plan developed by each operating unit. The plan consists of several broad strategic objectives with several subordinate intermediate results that contribute to its accomplishment. USAID monitors performance at both the strategic objective and intermediate result levels.

• Data for Performance Monitoring

In 1997, 74 percent of USAID's environmental strategic objectives had both target and actual performance data. This is a marked improvement over 47 percent with data in 1996. In FY97, performance data against an established target was reported for 76 percent of the 242 intermediate results in the environment goal area. USAID also monitors the percentage of strategic objectives for which indicators met or exceeded the annual target. This measure provides a perspective on aggregate strategic objective performance at the goal level. Of those strategic objectives in environment that reported data for 1997, performance indicator targets were met or exceeded in 82 percent of the cases, and not met in just 18 percent.

- **1997 Performance: Bureaus' Technical Performance Assessments**

Indicator data tell only part of the story. The USAID regional bureaus in Washington complete a detailed annual technical review of each strategic objective and intermediate result as part of their yearly program performance assessment. This review combines analysis of performance indicator data, qualitative evidence of progress, and performance trends and prospects, that gives a somewhat different distribution from that reported above. Of 72 strategic objectives in support of the environment goal, technical reviews by the regional bureaus judged that 24 percent exceeded performance expectations, 68 percent met expectations, and 8 percent fell short of expectations in 1997.

- **Reasons for Performance Problems**

USAID's environment portfolio is diverse, reflecting the variety of the world's ecological systems and human and economic conditions. Unique

factors in some countries affected progress toward specific environmental objectives. For example, El Niño-produced droughts and floods diverted resources from ongoing activities or hampered programs. Unfavorable economic conditions, such as those in **Bulgaria** and **Russia**, impeded progress toward some policy objectives in support of the environment. Despite these difficulties and the constraints of limited resources to address enormous and growing problems in the global environment, most of USAID's 1997 programming helped host countries advance their commitment and implement activities to address environmental concerns.

Several model programs and pilot technologies put in place in 1997 may have more long-term and widespread influence. Partnerships need to be expanded and strengthened to build the capacity of government, nongovernment, and private sector institutions, since they are key to long-term sustainability.

III. HIGHLIGHTS

These highlights reflect USAID's commitment to improve global trends, as defined in the Agency's strategy for protecting the environment.

Threats of Global Climate Change Reduced

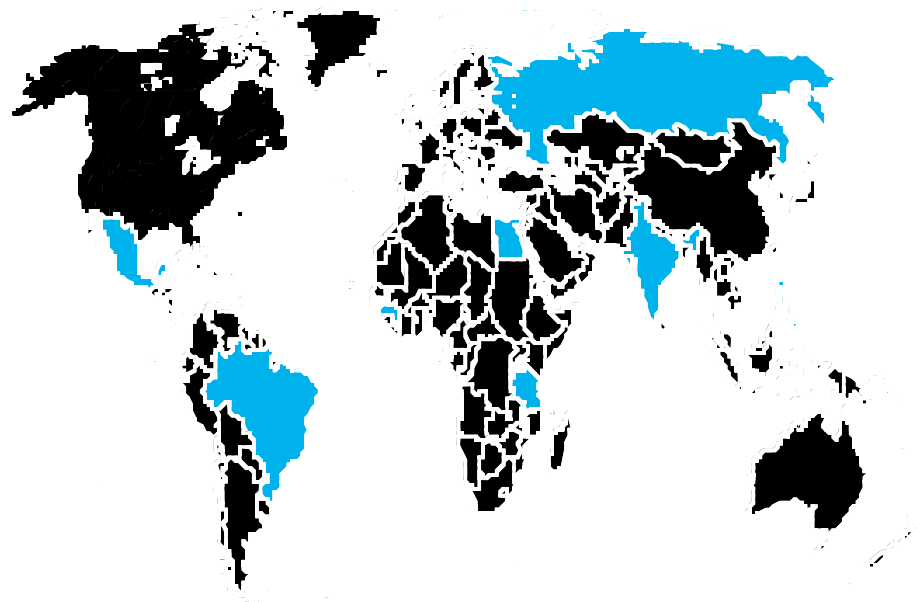
The Agency addressed the threat of global climate change through programs that 1) reduce greenhouse gas emissions, 2) slow deforestation and increase forest cover, and 3) help countries adapt to global climate change. The Agency promotes technology

development and use, builds capacity to plan and monitor, and involves community members. USAID global climate change programs work closely with host country government institutions but also place strong emphasis on partnerships with nongovernmental organizations at the national and community levels, as well as with businesses.

Greenhouse gas emissions avoided, a common indicator for positive change, is based on the replacement of fossil fuels, such as oil or coal, with cleaner energy sources or by energy efficiency

MAP 5.1

Objective 5.1: Threat of Global Climate Change Reduced



Country Programs

Brazil
Egypt
Guinea
Haiti
India
Mexico
Philippines
Russia
Tanzania

Regional Programs

African Sustainable Development
Central Asia Regional
Central America Regional

projects that reduce the energy needed for production or consumption. Data collected from more than 20 countries in 1997 show the avoidance of nearly 436,000 metric tons of emissions.¹⁶ In 1997, USAID carried out a range of environmental programs aimed at biodiversity conservation, energy efficiency, and forestry that also contributed to reducing greenhouse gas emissions. Their direct impact, however, cannot be easily measured.

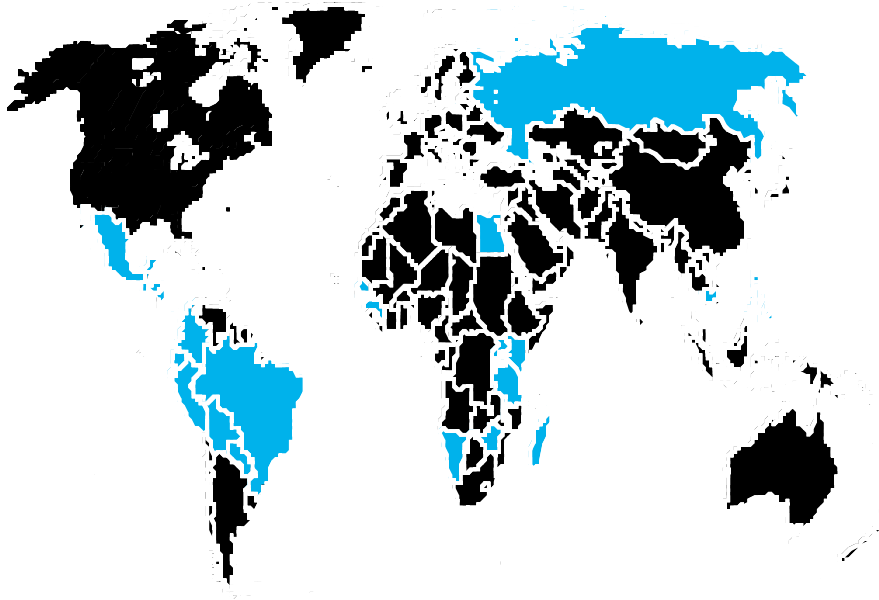
India provides an example of how an energy efficiency program can help lower greenhouse gas emissions. India is the sixth largest and second fastest growing producer of greenhouse gases in the world. The scope of the challenge illustrates how massive this problem is and how difficult it is to show progress. In 1997, USAID programs helped India avoid 20,000 metric tons of carbon dioxide emissions.¹⁷ Unfortunately,

given India's growth in energy use, this does not significantly cut greenhouse gas emissions overall, but the Agency's energy efficiency programs in India are spreading. For example, USAID-financed technical assistance and training at the Dadri power plant of the National Thermal Power Corporation helped achieve a 2.5 percent overall efficiency improvement in the heat produced per unit of energy used since March 1997. Encouraged by this success, the corporation decided to expand use of the improved techniques to all their power plants and invest \$2.5 million in 1998 alone in new, clean technology imported from the United States.

USAID's technical assistance to the **Philippines'** Department of Energy is another example of how the Agency is making an impact to reduce greenhouse gas emissions. Extensive policy dialog

MAP 5.2

Objective 5.2: Biological Diversity Conserved



Country Programs

Bolivia	Mexico
Brazil	Namibia
Cambodia	Nicaragua
Colombia	Panama
Ecuador	Paraguay
Egypt	Peru
Guatemala	Philippines
Guinea	Russia
Honduras	Senegal
Kenya	Tanzania
Madagascar	Uganda
Malawi	Zimbabwe

Regional Programs

REDSO/ESA
African Sustainable Development
Central America Regional
LAC Regional

with the department resulted in adoption of a new strategy to free up supplies of clean energy. It also contributed to the 1997 signing of a new natural gas sales and purchase agreement to provide 27,000 megawatts of clean electricity. This, in effect, displaces nearly half the greenhouse gas emissions of nine typical 300-megawatt coal-fired units. As a result, the Philippines is now a leader in Asia in advanced power sector technology. The Agency was also a primary catalyst in the development and application of new Philippine policies, regulatory frameworks, and fiscal measures that encouraged increased investment in clean and efficient power systems countrywide.¹⁸

An example of using forestry programs to fight greenhouse gas emissions comes from **Russia**, which accounts for more than 22 percent of the world's forested areas and 21 percent of its

estimated timber volume. Russia's forests provide the largest land-based carbon storage, or "sink," in the world, and they serve as a critical global resource to buffer the effects of global climate change. Because these forests are threatened by logging and massive forest fires, USAID initiated a reforestation program in 1997 that increased the production of seedlings from 6,500 to more than 1.2 million. These are badly needed to replenish vast deforested areas.¹⁹

Biological Diversity Conserved

USAID supports one of the most comprehensive biodiversity conservation programs of any bilateral donor. The Agency has contributed to safeguarding biological diversity by its efforts to 1) improve the management of

biologically significant areas, 2) promote the sustainable use of biological resources, and 3) support the conservation of genetic diversity.

Biologically diverse ecosystems can be conserved by changing policies, institutions, incentives, and other factors to permit host country NGOs and government agencies to provide conservation-related services, and to give people using the land the authority and incentive to manage their own resources sustainably. Small farmers and other resource users will abandon destructive practices only if they have economically and culturally acceptable alternatives.

In Africa, **Uganda's** diverse ecosystems make it an important country for the Agency's biodiversity work. USAID, in partnership with the World Bank–Global Environment Facility, developed and supported the Bwindi Trust, conceived in 1991. The trust is now managed by an independent board that includes USAID. One important outcome of trust activities in 1997 was the mountain gorilla census. Uganda is working to conserve one of the last remaining wild mountain gorilla populations in the world. Since the mountain gorilla is an “indicator species,” tracking the gorilla population helps monitor what is happening more broadly to biodiversity. The trust census, conducted in the Bwindi Impenetrable National Park, found 292 gorillas living in the park, meeting the 1997 target of 282–300 animals. Compared with 1991 data, these figures suggest that the park mountain gorilla population is stable, an indication of overall ecosystem health.²⁰

In Latin America, USAID-supported policy dialog led to the 1997 enactment of the Galápagos Special Law in

Ecuador, after years of conflict among stakeholder groups. In 1997, USAID-sponsored a conflict resolution process that facilitated development of a consensus among the three major groups with interest in the legislation—conservation, fisheries, and tourism.²¹ The law enforces a quarantine system to protect the Galápagos' environment from species introduced from the continent. It restricts immigration and empowers local institutions to take leadership in the affairs of the archipelago. Under the law, commercial fishing is prohibited within 40 miles of most parts of the islands, and park fees from tourism stay in the Galápagos to self-finance their programs.

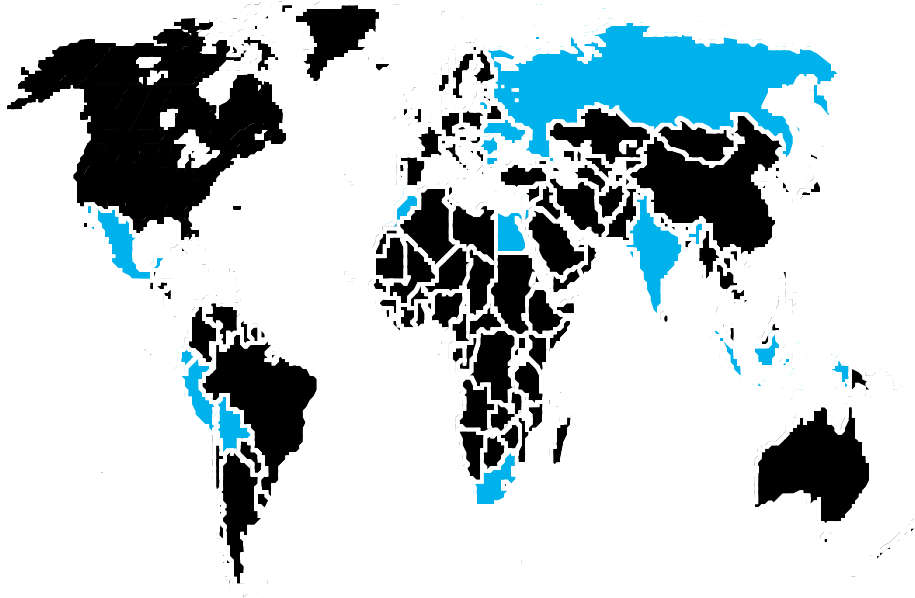
Promoting Sustainable Urbanization and Improving Pollution Management

At the end of this century, more than half the world's population will reside in urban areas, with most of this growth occurring in developing countries. Increased industrialization, without the use of clean production processes and pollution management, contaminates air, land, and water, posing significant health risks and undermining the productivity of natural ecosystems. USAID's urban programs improve the living conditions of the urban poor while protecting the well-being of future generations. The Agency works to 1) increase access to water and sanitation services, 2) improve urban management, and 3) improve pollution prevention and control.

In 1997, USAID worked in 40 countries in Asia, Africa, Europe, and Latin America to achieve these objectives. More than 528,000 poor urban families received financing for either home

MAP 5.3

Objective 5.3: Sustainable Urbanization/Pollution Management Promoted



Country Programs

Bolivia	Madagascar
Bulgaria	Mexico
Ecuador	Morocco
Egypt	Panama
El Salvador	Peru
Haiti	Romania
India	Russia
Indonesia	Slovakia
Jamaica	South Africa
Jordan	Ukraine
Lebanon	West Bank/Gaza
Lithuania	

Regional Programs

Central Asia Regional

improvement loans, mortgages, potable water hookups, or sanitary sewer connections under the Urban and Environmental Credit Program. To improve urban management, USAID worked with more than 40 city governments on raising local revenues, implementing new financial accounting procedures, and applying tariff and fee reforms to recover the costs of environmental improvements. The Agency also worked in these cities to increase citizen involvement in budgetary decisions of mayors and city managers and to enact internal management controls to improve local government accountability and management. To reduce urban pollution in 1997, the Agency promoted the adoption of 270 cleaner production policies and manufacturing processes in **Bolivia, Ecuador, Egypt, Indonesia, and Paraguay.**²²

The Agency also made significant progress in 1997 toward developing financing instruments that utilize the capital market and banking system to finance urban infrastructure. For example, USAID helped the city of Ahmedabad, in **India**, issue its first municipal bond. The issuance, and the adoption of municipal bond financing as a model, is helping direct India's domestic investments toward municipal infrastructure and improving much needed municipal services. At least six other Indian cities are now pursuing municipal bond programs. Similar efforts by USAID/**Poland** led to the development and issuance of municipal bonds in Warsaw and six other Polish cities in 1997. USAID also succeeded in developing and promoting alternative financing models for municipal services and shelter, such as its build-own-transfer project in Tirupur, in **India**. This first-ever Indian water sup-

The Agency uses its **Urban and Environmental Credit Program** to address urban management issues. The program, which targets and benefits urban poor, provides countries with access to financial resources borrowed from the U.S. private sector to finance urban infrastructure and shelter in low-income neighborhoods. This includes electrification projects, home improvement loans, home mortgages, potable water hookups, roads, sanitation connections, and solid-waste collection.

In FY97, USAID disbursed \$150 million, giving 528,000 households access to urban services and shelter in **Chile, the Czech Republic, Indonesia, Morocco, Poland, South Africa, Sri Lanka, Tunisia, and Zimbabwe**. For example, 240 lower-income households in Chile and 14,000 households in the Czech Republic received program-financed mortgages. In Indonesia, 393,000 lower income households received potable-water hookups in their neighborhoods. In Morocco, 52,000 households were connected to sewer mains and potable-water hookups. In South Africa, 51,000 households in low-income communities were provided with home improvement loans, mortgages, potable-water hookups, and sanitation connections. The program also financed mortgages for 1,700 households in Sri Lanka. In Tunisia, 9,600 lower income households received potable water and sanitation connections. In Zimbabwe, local construction companies built 5,894 low-cost shelter units for lower income families.

ply effort was fully privatized in 1997. In **Indonesia and South Africa**, USAID provided similar support in 1997 to help local governments reduce their need for capital reserves and establish basic infrastructure of private service providers to benefit urban dwellers.²³

Another way the Agency has addressed environmental issues in Asia is through its interagency program—the United States–Asia Environmental Partnership (US–AEP). U.S. government partners alone include the Environmental Protection Agency and the Department of

Commerce. In **India**, an NGO–business partnership supported by US–AEP reduced solid waste from mango-processing plants by 90 percent. Each of the 27 food-processing factories was dumping more than 2,000 tons of waste every harvest season. After training and consultation on clean production, the plants generated almost no solid waste and converted the small remaining amount into other products.²⁴ Across all clean-technology areas, including air pollution, hazardous waste, recycling, solid waste, and water and wastewater, US–AEP leveraged more than \$10 million from other partners in FY97.²⁵

Urban wastewater treatment continues to be a high priority for USAID. For example, in Alexandria, **Egypt**'s second largest city, the Agency in 1997 provided wastewater conveyance and primary treatment facilities to more than 200,000 previously unserved households. Providing such facilities, though, is only part of building a sustainable program. It is also necessary to develop systems that will provide ongoing financing, mostly from user fees, to maintain services, expand outreach, and train and recruit professional staff. Throughout Egypt, USAID in 1997 worked closely with partners on cost recovery through improved billing and collection practices. Utilities in the cities of Aswan, Minuya, Beni Suef, Fayoum, and Mansoura increased cost recovery by 167 percent, 73 percent, 45 percent, 37 percent, and 10 percent, respectively. In Alexandria, wastewater authority revenues for 1997 increased by 30 percent over 1996. At this rate, full cost recovery will be achieved in several locations by 2000.

In Latin America, **Peru** exemplifies what USAID accomplished by combined waste disposal and waste prevention programs. In 1997 a pilot project with a local NGO established Lima's first manually operated landfill recognized by local government authorities. Under this program, three microenterprises, owned and operated by economically disadvantaged women, provided collection services. The Agency leveraged \$1.5 million from the European Union to finance larger scale replication of this project. As a result of these and other activities in 1997, more than 50 percent of solid waste in Lima was properly disposed of in approved landfills.²⁶

In central and eastern Europe and the new independent states, several successful activities promoted sustainable urbanization and improved pollution management. USAID helped the industrial sector adopt low-cost methods to reduce waste, lower emissions, reduce energy use, and increase energy efficiency. In 1997, USAID supported waste minimization–energy conservation demonstration projects in the Donetsk and Dnipropetrovsk regions of **Ukraine**. These projects led to an estimated total reduction of 31.2 million cubic meters in annual natural gas use. They also prevented discharge of 530 tons of ammonia per year into wastewater systems, and they prevented the release of 26 tons of carbon monoxide and 12 tons of nitrogen oxide into the air.

Also in **Ukraine**, the L'viv Water Utility Restructuring project provided 120,000 residents in L'viv's Pashichna district and surrounding areas with

significantly improved access to potable water and water services. USAID initiated an energy efficiency pilot project in 1997 that purchased energy efficiency improvements such as adjustable-speed drives for water pumps that reduced electrical energy consumption by one million kilowatt-hours.

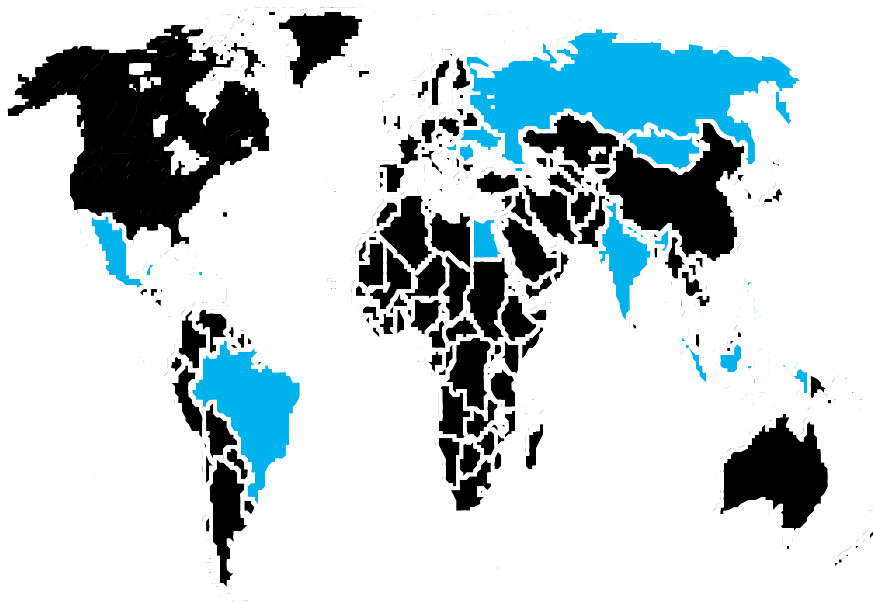
In Central Asia in 1997, USAID worked on several fronts: reducing regional economic and political tensions generated by transboundary environmental issues such as water; mitigating the environmental damage of the Aral Sea disaster on local populations; and developing legal and regulatory frameworks to reduce environmental risks to public health. Work in the Aral Sea area has been in progress since 1990.

In 1997, USAID increased the availability of fresh water for two million people in **Kazakstan, Turkmenistan, and Uzbekistan** by helping rehabilitate wells, install waste treatment and monitoring systems, and improve waste collection. In 1997, the Agency also helped to develop a regional water sharing and pricing agreement, that established, for the first time, modern watershed management practices among the Central Asian republics.²⁷

The Agency also works to conserve water in commercial operations. In 1997, USAID collaborated with **Jamaica's** Hotel and Tourist Association on a pilot program to help small and medium-size hotels develop effective environmental management systems. As a result, six hotels saved \$220,000 in 1997 from an initial capital investment of \$105,000. The average

MAP 5.4

Objective 5.4: Use of Environmentally Sound Energy Services Increased



Country Programs

Armenia	Lithuania
Brazil	Mexico
Dominican Rep.	Moldova
Egypt	Mongolia
Georgia	Nepal
Hungary	Philippines
India	Romania
Indonesia	Russia
Latvia	Ukraine

Regional Programs

Central Asia Regional
Central America Regional

payback period was less than six months. In addition, water use for these hotels dropped from 225,000 cubic meters a year to 135,000 cubic meters. One hotel received the coveted Green Globe award, the first such award in the region, for showing how adopting an environmental management system can reduce pollution and improved the bottom line.

Use of Environmentally Sound Energy Services Increased

Most developing countries must expand their energy supplies to support sustainable development. Energy availability drives economic growth and can enhance quality of life. Yet many current energy production and consumption

patterns are unsustainable. USAID economic assistance programs are designed to foster private investment in clean energy, energy efficiency, and renewable energy in developing countries and economies in transition. These programs also foster a favorable environment for select U. S. exports and investment by

- Helping developing countries and countries in transition design effective new policies, regulations, investment entities, and tax reform so they can tap private capital and talent
- Stimulating trade by providing leads and supporting conferences, trade missions, essential preinvestment funding, and needed technical assistance

- Building lasting relationships between businesspeople at home and abroad that will help position the United States in the global marketplace of the next century

For example, in 1997, USAID helped form a partnership between the American utility Columbia Gas and **Russia's** utility Penzagaz to develop an automated customer information and payment system. Columbia helped Penzagaz establish a direct-payment center to avoid costly bank transaction fees. This resulted in a saving worth more than \$61 million for Penzagaz.²⁸

In **Indonesia**, USAID worked with the government in early 1997 to establish policies and practices for a cleaner, more efficient power supply by tracking installed generation capacity from all renewable sources, including biomass, geothermal, solar, water, and wind. These new policies helped three geothermal plants generate more than 3,700 megawatts of new, renewable energy in 1997.²⁹

In 1997 a California company, sponsored by the California Trade and Commerce Commission, used an Agency grant to conduct successful energy-efficient lighting workshops and demonstrations throughout **India**. Participants judged the workshops so productive that Indian utilities and government officials requested more. As a result, energy-efficient lighting was installed in several five-star Indian hotels in 1997. Bombay Services Electric Supply is working to market this American technology more broadly. Other spinoffs include government initiatives to remove barriers to

energy-efficient lighting products and the start of a performance-contracting strategy to help eliminate up-front costs and guarantee long-term energy and financial savings.³⁰

Sustainable Management of Natural Resources Increased

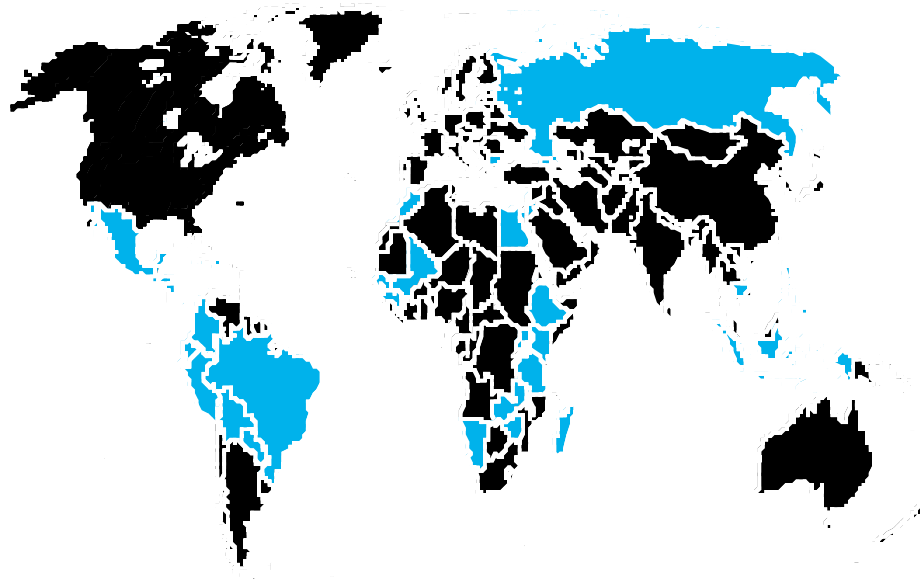
In many parts of the world, natural resources are degraded, depleted, and used inefficiently. Sustainable management depends on striking a workable balance between the preservation and renewal of resources and their use for economic well-being. USAID natural resource programs include 1) improved management of coastal zones, forests, and water resources, 2) increased use of sustainable agricultural practices, and 3) enhanced public and community awareness of natural resource sustainability issues and how they can be addressed.

Latin America is a good example of USAID's work in **natural resource management and biodiversity conservation**. In the Petén area of Guatemala, the Agency emphasizes people, policies, and institutions. Its work resulted in several notable gains in 1997.

For example, deforestation in Maya Biosphere Reserve was only 0.3 percent, compared with 10 percent in sites where no intervention was done. The Agency also helped establish two endowment funds and a more permanent source of income through tourism taxes. These funds help support local park management and conservation. In 1996, 12,693 hectares were under management concessions. This increased to 87,220 hectares in 1997, almost three times the targeted area.

MAP 5.5

Objective 5.5: Sustainable Management of Natural Resources Increased



Country Programs

Bolivia	Lebanon
Brazil	Madagascar
Bulgaria	Malawi
Cambodia	Mali
Colombia	Morocco
Dominican Rep.	Namibia
Ecuador	Nicaragua
Egypt	Panama
El Salvador	Paraguay
Ethiopia	Peru
Georgia	Philippines
Guatemala	Russia
Guinea	Senegal
Haiti	Tanzania
Honduras	Uganda
Indonesia	West Bank/Gaza
Jamaica	Zambia
Jordan	Zimbabwe
Kenya	

Regional Programs

RCSA
 REDSO/ESA
 Sahel Regional
 African Sustainable Development
 Central Asia Regional
 Central America Regional
 LAC Regional

With USAID-financed technical assistance, **Jordan**'s cabinet approved its first comprehensive irrigation water policy in 1997. The irrigation policy covers differential water pricing based on water quality, full recovery of operation and maintenance costs, and partial capital cost recovery. It also covers on-demand irrigation water supply, increased efficiency of on-farm water use through incentives and technical assistance, and farmer-operated and managed irrigation systems.³¹

Policy change is important but must be followed closely by behavioral change. In Africa, about 2,000 rural farmers in **Senegal** were trained in natural resource management practices in 1997 with USAID-support. Under the Agency program, NGOs, the national research institute, and farmers worked

together to identify improved natural resource management practices that have a high rate of return. These practices promote increased rural household revenues and improved household self-sufficiency in staple cereals. Farmers learned animal stabling, composting, rock dike construction, use of improved seeds, and windbreak creation. The program also achieved some unexpected positive results: Grain storage banks and off-season vegetable production led to better year-round family nutrition and food security. Villagers who received training were better positioned to assume leadership roles in democratic governance. And local groups from 56 communities used the income generated from demonstration fields to establish revolving credit systems.³²

IV. CASE STUDIES: USAID APPROACH TO BIODIVERSITY CONSERVATION

This section explores USAID's overall approach to biodiversity conservation in protected areas and some of its on-the-ground activities. Case studies, rather than an inventory of all the Agency's biodiversity efforts, exemplify aspects of this overall approach. Recent external evaluations of the Parks in Peril Program and the Lake Baikal watershed, two very different biodiversity conservation efforts, make it possible to consider program effectiveness and its relationship to Agency activities around the world.

Since 1987, the Agency has had the largest biodiversity program of any bilateral donor. USAID concentrates on strengthening systems of parks and protected areas, but also works to improve biodiversity conservation in critical areas not under formal legal protection.³³ Protecting biodiversity is a maturing science calling for considerable trial and error. This uncertainty is matched by the complexity of the socioeconomic and political context in which park protection occurs and is coupled with measurement issues. Yet it is undeniable that park protection remains a critical objective for all those involved in sustaining and preserving the earth's shrinking biological resources.

While USAID has a long-term approach to strengthening protection of parks and other significant areas, limited resources make it impossible for the Agency or any organization to protect all sensitive areas in developing and transition countries. Because of the complexities of biodiversity protection, USAID directs its efforts at a few critical levels, such as formulating policy;

strengthening institutions; facilitating coordination between communities, government, and NGOs; and strengthening on-site park protection. On all these fronts, the Agency continues to experiment and to learn how to safeguard biodiversity by trying new approaches and borrowing effective techniques from others.

A crucial part of the Agency's approach is to act locally—to facilitate the involvement of local communities, NGOs, and indigenous peoples that live near protected areas. USAID also works closely with other bilateral and multilateral donors to ensure coordination to increase program impact and sustainability. In Latin America and the Caribbean, USAID's efforts to strengthen parks and protected areas are best exemplified by its support of the Parks in Peril program.

Parks in Peril

Latin America and the Caribbean are particularly important for global biodiversity, so it is here that USAID supports the Parks in Peril program—an ambitious long-term attempt to strengthen park protection in the region. "Parks in Peril" is a term used by The Nature Conservancy to describe 60 protected areas that cover more than 30 million hectares (116,000 square miles—a total area about the size of Arizona).³⁴ The program was developed to conserve threatened ecosystems by working in legally designated protected areas. Specifically, it aims to improve park on-site management. USAID supports 28 high-priority pro-

At the end of 1997, 10 of the 28 high-priority protected areas USAID supports no longer needed intensive funding.

tected areas through Parks in Peril, which collectively strengthens management of eight million hectares, roughly the size of South Carolina.³⁵

At the end of 1997, 10 of the 28 high-priority protected areas USAID supports no longer needed intensive funding. As other parks become self-sufficient in management and protection, they will also graduate.³⁶ The many sites in the Parks in Peril Program represent the variety of ecosystems found in Latin America and the Caribbean whose preservation is critical to safeguarding the region's rich biodiversity.

A panel of specialists in park protection and management recently conducted an external evaluation of the Parks in Peril Program, looking at 7 of the 28 sites.^{37, 38} The biological significance of the sites makes them important to biodiversity conservation. For example, La Encrucijada Biosphere Reserve in Chiapas state, in southeastern **Mexico**, has unique and extensive mangrove forests that contain several important species. The reserve is home to substantial populations of jaguar, ocelot, and caiman. In addition, the reserve protects the habitat of critically endangered species such as the hawksbill turtle and the spider monkey.³⁹

The Sian Ka'an Reserve, also in Mexico, in the state of Quintana Roo, contains more than 1,200 species of higher plants and 110 kilometers of coral reef. Sian Ka'an (an ancient Mayan name meaning "Where the Sky Is Born") is home to healthy populations of larger mammals such as jaguars, manatees, tapirs, and two species of peccary. The presence of mammals

such as these, which are at the top of the food chain, is a good measure of the overall ecosystem stability.⁴⁰

In **Costa Rica**, the Talamanca—Caribbean Biological Corridor is unique among the sites in that it is designed to connect another protected area, La Amistad Biosphere Reserve, with the Caribbean Sea. This 1.5-million-hectare area was established to allow the movement of flora and fauna between the mountainous La Amistad forests and the coast. Talamanca is home to at least 113 species of mammals, including the critically endangered spider monkey.⁴¹

• On-Site Protection

Parks in Peril works to strengthen the on-site capacity for long-term protection of target parks and reserves. According to study panel experts, this "is the objective most consistently met by the program, and basic protection of most sites has been achieved in a remarkably short time."⁴²

Parks in Peril uses the term "basic protection" to include adequate physical infrastructure, on-site personnel and their training, land tenure issues, the use of threats analysis, and the official declaration of protected-area status. The external evaluation team concluded that this was largely accomplished in the sites studied. For example, basic facilities, communications systems, field equipment, and transportation were established and functioning well. Park personnel and those from partner organizations were generally well qualified, trained, and dedicated. Overall, according to the expert panel, land tenure issues and threats were clearly identified.⁴³

Two critical on-site protection challenges to the long-term sustainability of the Agency's efforts include the career instability of newly trained park personnel and the low priority some park managers gave to public access to the parks. Local government policies determine career paths, and Parks in Peril will further emphasize the importance of keeping skilled park managers through collaborative efforts with government agencies. More recreation and ecotourism management training are also needed to make park managers more sensitive to the importance of public access.⁴⁴

Long-term management goals go beyond the basic protection levels achieved at the sites. They encompass reserve zoning and buffer zone management, overall management planning, science and information, and monitoring. However, the program was somewhat less successful in achieving these long-term management goals than it was in achieving basic protection.⁴⁵ Long-term goals such as buffer zone management are sophisticated aspects of park protection that are not yet fully in place even in countries with greater financial resources and know-how. However, USAID successes in achieving basic protection in a short period of time are a good sign that the long-term goals are likely to be reached.

- **Strengthening Partner NGOs' Capacity**

USAID works with NGOs to improve their organizational structure and also promotes greater NGO participation in policies affecting protected areas. The expert panel noted that a particular strength of Parks in Peril was its consistent ability to strengthen NGO

capacity.⁴⁶ The Nature Conservancy, one of USAID's local partner in implementing this program, has concentrated on developing and sustaining relationships of mutual respect with its partners and strengthening their organizational capacities. Its assistance to partners is critical to capacity-building of NGO staff and boards of directors, U.S.-based and international fundraising, and policy formulation.⁴⁷ In all countries the panel visited, it observed strong evidence of partner capacity-building for national NGO partners.

- **Developing Community Constituencies**

Consistent with conclusions of the first Latin American Congress on National Parks and Other Protected Areas, the Parks in Peril Program recognizes that conservation is a social issue. Parks in Peril works to develop a community constituency to support the sustainable management of targeted protected areas through 1) increased awareness of the importance of the protected areas, 2) increased participation in protected-area management, and 3) increased economic benefits from protected-area maintenance.⁴⁸

The direct participation of local people in management and technical advisory committees set up by Parks in Peril varies from site to site. Not all efforts to involve local communities have been successful. Some conservation enterprises provided insufficient or few benefits to local people. It appears that the program does not always involve women and indigenous groups as much as men in economic benefits, access to conservation and management information, and participatory decision-making.⁴⁹ The Agency is aware of these

challenges, and in keeping with its “learning laboratory” approach toward biodiversity conservation, is working to promote more community involvement.

- **Long-Term Financial Self-Sufficiency**

Parks in Peril’s basic site protection and management structure has attracted tens of millions of dollars from international and national donors. However, except for Sian Ka’an and the biosphere reserve Sierra de las Minas (in **Guatemala**), most financial commitments for the sites are only short term or moderate. This puts the conservation of the other sites at risk, especially if a major source of support disappears or slows significantly. Long-term financial viability is a challenge that has been met through the establishment of site-specific endowments, securing funding from nations’ environmental funds, formalizing long-term commitments from national or international private sources and other funding sources. Parks in Peril has established long-term financial sustainability at a few sites, and is using the lessons learned in the remaining parks.

While the external evaluation revealed that PiP was making solid progress on most fronts,⁵⁰ it also found that two areas need more attention. The program needs to make greater efforts to reach out and engage community groups in management and technical decisions, and it needs to further examine ways to secure more long-term financing to ensure sustainability. USAID, its environmental partners, NGOs, and community groups are working together vigorously to consolidate Parks in Peril successes to date and to explore options to remedy program shortcomings.

Lake Baikal Watershed

In a very different part of the world, the Agency supported the work of Ecologically Sustainable Development, Inc. (ESD), a USAID implementing agency, to help local authorities plan for and manage the highly diverse Lake Baikal watershed in southeast Siberia.⁵¹ Here the Agency’s approach to biodiversity conservation echoes some central elements of the Parks in Peril Program, following USAID’s overall approach to biodiversity.

With a maximum depth of more than a mile (5,712 feet), Lake Baikal is the deepest lake in the world, containing some 20 percent of the world’s freshwater supply. The lake is 395 miles long and up to 50 miles wide. The watershed also supports tremendous biodiversity, with 1,400 species of higher plants recorded and 1,500 aquatic species, 80 percent of which are found nowhere else on the planet. A particularly significant aquatic species is the unique freshwater Baikal seal. Indeed, UNESCO recognizes the Lake Baikal region as a Natural World Heritage Property.

As with Parks in Peril, the Lake Baikal watershed program emphasizes long-term sustainability by coordinating land use. By strengthening land-use authorities, much as Parks in Peril’s on-site management was enhanced, the Agency is helping build stronger institutions and better land–water stewardship. Ecologically Sustainable Development, Inc., also implemented models related to agriculture, ecotourism, land-use projects, and sustainable forestry.⁵²

USAID's Lake Baikal work has concentrated on the legal designation of Arakhley Lakes as a refuge. At an ESD-organized public meeting, local residents expressed their strong belief that the lakes should be protected. As a result, the local government organization adopted regulations to guide management and ensure watershed protection. A director and rangers have already been hired for the refuge, and NGOs and educational institutions are involved in fostering environmental awareness.

The lessons learned at Arakhley Lakes are being used to establish another protected one area in the Chita oblast.⁵³ The federal forest service with responsibility for this oblast drafted a new 10-year plan for forestlands based on multiple-use concepts developed with USAID support. ESD has also successfully introduced more modern land-use planning techniques assisted by geographic information systems at regional centers in Chita, Irkutsk, and Ulan Ude. These centers have helped land-use planners produce thematic maps with several layers of integrated information including geology, hydrology, and human-induced impact zones.⁵⁴ These efforts were closely coordinated with the Department of State and USAID's Commodities Import Program.

Other ESD projects strengthen biodiversity, including Kizhenga Farms, where students are trained in agricultural and environmental practices. Training at the Siberian Agricultural Institute led to farmers adopting organic fertilizers and crop rotation.⁵⁵ Such demonstrations of environmentally benign agriculture help ensure that the Lake Baikal watershed will be free of pollutants from other more damaging agricultural practices.

Whether in Latin America and the Caribbean or in the Russian Federation, the Agency works to strengthen parks and protected areas and the institutions that manage them. These efforts help preserve biodiversity. Local and national governments, national NGOs, and the local communities and indigenous peoples that live near the protected areas are involved. In both the Parks in Peril Program and the Lake Baikal Watershed Program, USAID learned valuable lessons about the importance of reaching out and working with stakeholders. The Agency needs to do more in these areas, and it is exploring ways to make this happen. The sustainability of its efforts, whether in terms of the career stability of newly trained personnel or the future financial support for protected areas, is an area USAID can affect.

V. CONCLUSION

This past year has seen increased attention worldwide to environmental issues—especially those that have challenged the world's abilities to protect air, water, and other natural resources; to preserve life; and to sustain economic livelihoods. El Niño had devas-

tating effects on Africa, Asia, South America, and the U.S. West Coast. Biologically rich forests in Indonesia were sacrificed; uncontrolled forest fires filled the skies in Southeast Asia, Brazil, Mexico, and Central America with health-threatening haze and smoke.

At the same time, 1997 witnessed progress on several transboundary issues, including the signing of the Kyoto Protocol to curb global greenhouse gas emissions. USAID continued to take a leadership role worldwide with efforts such as its Climate Change Initiative and its global urban strategy Making Cities Work.

The Agency maintained close working relationships with development partners in 1997 to support five shared environmental objectives: global climate change, biological diversity, sustainable urbanization and pollution management improvement, environmentally sound energy services, and improved natural resource management. There was a modest rise in the number of USAID-assisted countries with environmental programs—mainly in Latin America and Africa—but the overall distribution among the five environmental objectives remained about the same.

In 1997, USAID was better able to monitor and measure its environmental performance and to meet its stated targets. But the bigger environmental picture remains, at best, cloudy. The strength of USAID's environmental programs rests primarily on its ability to pioneer and test new approaches in selected sites, to innovate public-private partnerships to benefit the environment, and to energize community-based natural resource stewardship.

Given the immensity of the environmental challenge and serious resource constraints, the Agency works mostly at pilot sites to develop and test interventions. Desired environmental change at the national, transnational, and global level can only come, realistically, from replicating and spreading the strategic efforts of USAID, its environmental partners, and the wider donor community. Unfortunately, some evidence suggests that worldwide donor commitments to the environment, like those of the World Bank, are not keeping pace and may even be declining.

Worldwide environmental trends continue to spiral downward. Insufficient land is being set aside for conservation and protection, coastal resources and tropical forests are still being rapidly depleted, deforestation rates continue to rise—even accelerate. Urban pollution gets worse, not better, as cities expand beyond their limits to provide essential municipal services. One of the few positive environmental trends in 1997 is that more countries are recognizing the need to develop and implement national environmental action plans. How strong this commitment is in the face of competing developmental demands such as job creation, energy production, and massive land clearing, as well as natural disasters and civil instability is not known. Too often, the environment is a silent objective than “can wait,” or one that competes directly with economic growth.